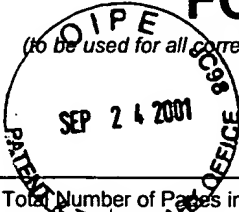
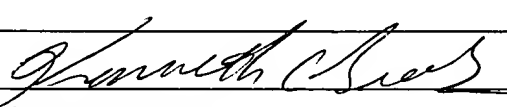
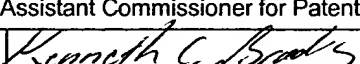



Under the Paper Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

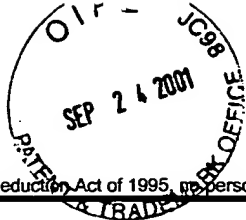
TRANSMITTAL FORM (to be used for all correspondence after initial filing) 		Application Number	09/678,266
		Filing Date	10/03/00
		First Named Inventor	Xi, Ming
		Group Art Unit	1762
		Examiner Name	Unassigned
Total Number of Pages in This Submission	Attorney Docket Number		4714 P1/AMI-00-1

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SEP 27 2001
TC 1700

ENCLOSURES (check all that apply)		
<input checked="" type="checkbox"/> Fee Transmittal Form <input type="checkbox"/> Fee Attached <input type="checkbox"/> Amendment / Response <input type="checkbox"/> After Final <input type="checkbox"/> Affidavits/declaration(s) <input type="checkbox"/> Extension of Time Request <input type="checkbox"/> Express Abandonment Request <input type="checkbox"/> Response to Missing Parts/Incomplete Application <input type="checkbox"/> Response to Missing Parts under 37 CFR 1.52 or 1.53	<input type="checkbox"/> Assignment Papers (for an Application) <input type="checkbox"/> Drawing(s) <input type="checkbox"/> Licensing-related Papers <input type="checkbox"/> Petition Routing Slip (PTO/SB/69) and Accompanying Petition <input type="checkbox"/> To Convert a Provisional Application <input type="checkbox"/> Power of Attorney, Revocation <input type="checkbox"/> Change of Correspondence Address <input type="checkbox"/> Terminal Disclaimer	<input type="checkbox"/> After Allowance Communication to Group <input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences <input type="checkbox"/> Appeal Communication to Group (Appeal Notice, Brief, Reply Brief) <input type="checkbox"/> Proprietary Information <input type="checkbox"/> Status Letter <input checked="" type="checkbox"/> Additional Enclosure(s) (please identify below): <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">Petition Under 37 CFR § 1.48 (a) with Exhibits A-G attached</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">Return receipt postcard to Kenneth C. Brooks</div> <div style="border: 1px solid black; padding: 2px;">Return receipt postcard to Applied Materials, Inc.</div>
Remarks		
SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT		
Firm or Individual name	Kenneth C. Brooks, Reg. No. 38,393	
Signature		
Date	September 20, 2001	

CERTIFICATE OF MAILING			
I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231 on this date:			
Type or printed name			
Signature		Date	September 20, 2001

Burden Hour Statement: This form is estimated to take 0.2 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.



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PTO/SB/17 (11-00)
Approved for use through 10/31/2002. OMB 0651-0032
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

<h1>FEE TRANSMITTAL</h1> <h2>for FY 2001</h2> <p>Patent fees are subject to annual revision.</p>		Complete if Known		
		Application Number	09/678,266	
		Filing Date	10/03/00	
		First Named Inventor	Ming Xi, et al.	
		Examiner Name	Unassigned	
TOTAL AMOUNT OF PAYMENT (\$)		130.00	Group Art Unit	1762
			Attorney Docket No.	4714 PI/ AMI-00-11

METHOD OF PAYMENT		FEE CALCULATION (continued)																																													
1. <input checked="" type="checkbox"/> The Commissioner is hereby authorized to charge indicated fees and credit any overpayments to: Deposit Account Number: 50-0345 Deposit Account Name: Applied Materials, Inc. <input checked="" type="checkbox"/> Charge Any Additional Fee Required Under 37 CFR 1.16 and 1.17 Applicant claims small entity status. See 37 CFR 1.27		3. ADDITIONAL FEES																																													
2. <input type="checkbox"/> Payment Enclosed: <input type="checkbox"/> Check <input type="checkbox"/> Credit Card <input type="checkbox"/> Money Order <input type="checkbox"/> Other																																															
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SUBMITTED BY		Complete (if applicable)	
Name (Print/Type)	Kenneth C. Brooks	Registration No. (Attorney/Agent)	38,393
Signature		Telephone	
		Date	9/20/2001

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Xi, et al.

Serial No: 09/678,266

Filed: October 3, 2000

For: METHOD AND APPARATUS FOR DEPOSITING REFRACTORY METAL LAYERS
EMPLOYING SEQUENTIAL DEPOSITION TECHNIQUES TO FORM A
NUCLEATION LAYER

PATENT APPLICATION

Group Art Unit: 1762

Examiner: Unassigned

Petition Under 37 CFR § 1.48(a)

Hon. Commissioner
for Patents
Washington, D.C. 20231

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SEP 27 2001
TC 1700

Sir:

Applicants and Assignee hereby petition to amend the inventive entity in the above-identified patent application to **include three (3) additional co-inventors**, namely, Xinliang Lu, Ken Kaung Lai and Karl A. Littau pursuant to 37 CFR 1.48(a). Applicants and Assignee also hereby petition to amend the inventive entity in the above-identified patent application to **remove three (3) co-inventors**, namely, Jeong Soo Byun, Lawrence Chung-Lai Lei and Hua Chung pursuant to 37 CFR section 1.48(a). To that end, under 37 CFR 1.48(a)(1), please find accompanying this petition as Exhibits A, B and C, D, E, and F, statements from each of the aforementioned individuals, respectively, affirming that an error in inventorship occurred without deceptive intent.

Pursuant to 37 CFR 1.48(a)(2), please also find accompanying this petition a Combined Declaration and Power of Attorney executed by the actual inventors, namely, Ming Xi; Ashok Sinha; Moris Kori; Alfred W. Mak; Xinliang Lu; Ken Kaung Lai; and Karl A. Littau, comporting with the requirements of 37 CFR 1.63.

09/26/2001 MABDI1 00000139 500345 09678266

01 FC:122 130.00 CH

Attached as Exhibit G, is the Consent of the Assignee in order to amend the inventive entity to include Xinliang Lu, Ken Kaung Lai and Karl A. Littau. Included with Exhibit G is a statement under 37 CFR section 3.73(b) establishing the right of the assignee to take action in the above-identified United States patent application, with supporting papers.

Finally, pursuant to 37 CFR 1.48(a)(3) authorization is given via the enclosed fee transmittal sheet to charge the requisite petition fee of \$130.00, as set forth in 37 CFR 1.17(i).

Based upon the foregoing, the Applicants and Assignee respectfully request that the petition be granted to amend the inventive entity to consist of the following individuals: Ming Xi; Ashok Sinha; Moris Kori; Alfred W. Mak; Xinliang Lu; Ken Kaung Lai; and Karl A. Littau.

CERTIFICATE OF MAILING

I hereby certify that this paper, along with any paper referred to as being attached hereto or enclosed herewith, is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, Washington, D.C. 20231.

Date of Transmittal:

9/20/01

Signed:

Kenneth C. Brooks

Typed Name:

Kenneth C. Brooks

Respectfully submitted,



Kenneth C. Brooks

Reg. No 38,393

Attorney for Applicant

Telephone No. 512 527 0104

Facsimile No. 512 527 0107



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Xi et al.

PATENT APPLICATION

Serial No: 09/678,266

Group Art Unit: 1762

Filed: October 3, 2000

Examiner: Unassigned

For: METHOD AND APPARATUS FOR DEPOSITING REFRACTORY METAL LAYERS
EMPLOYING SEQUENTIAL DEPOSITION TECHNIQUES TO FORM A
NUCLEATION LAYER

Statement of Xinliang Lu Under 37 CFR § 1.48(a)(1)

I, XINLIANG LU, states as follows:

1. I am over the age of eighteen years and am a co-inventor of the invention defined by the claims, in the above-identified patent application, by virtue of my contribution to the same and my Declaration under 37 CFR section 1.63 that is attached hereto.

2. I make this statement in support of a Petition Under 37 CFR § 1.48(a), which I am informed, and which I believe, will be filed herewith to amend the inventorship of the above-identified patent application to include myself.

3. The omission of myself as a named inventor in the patent application referred to above in paragraph one (1) resulted in an error in the inventorship of the above-identified patent application that occurred without any deceptive intent on my part.

Date: 08/10/2001


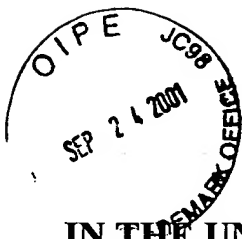

o Xinliang Lu

EXHIBIT A



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Xi et al.

PATENT APPLICATION

Serial No: 09/678,266

Group Art Unit: 1762

Filed: October 3, 2000

Examiner: Unassigned

For: METHOD AND APPARATUS FOR DEPOSITING REFRACTORY METAL LAYERS
EMPLOYING SEQUENTIAL DEPOSITION TECHNIQUES TO FORM A
NUCLEATION LAYER

Statement of Ken Kaung Lai Under 37 CFR § 1.48(a)(1)

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SEP 27 2001
TC 1700

I, KEN KAUNG LAI, states as follows:

1. I am over the age of eighteen years and am a co-inventor of the invention defined by the claims, in the above-identified patent application, by virtue of my contribution to the same and my Declaration under 37 CFR section 1.63 that is attached hereto.

2. I make this statement in support of a Petition Under 37 CFR § 1.48(a), which I am informed, and which I believe, will be filed herewith to amend the inventorship of the above-identified patent application to include myself.

3. The omission of myself as a named inventor in the patent application referred to above in paragraph one (1) resulted in an error in the inventorship of the above-identified patent application that occurred without any deceptive intent on my part.

Date: 8-13-2001

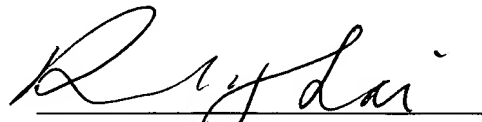

© Ken Kaung Lai

EXHIBIT B



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Xi et al.

PATENT APPLICATION

Serial No: 09/678,266

Group Art Unit: 1762

Filed: October 3, 2000

Examiner: Unassigned

For: METHOD AND APPARATUS FOR DEPOSITING REFRACTORY METAL LAYERS
EMPLOYING SEQUENTIAL DEPOSITION TECHNIQUES TO FORM A
NUCLEATION LAYER

Statement of Karl A. Littau Under 37 CFR § 1.48(a)(1)

I, KARL A. LITTAU, states as follows:

1. I am over the age of eighteen years and am a co-inventor of the invention defined by the claims, in the above-identified patent application, by virtue of my contribution to the same and my Declaration under 37 CFR section 1.63 that is attached hereto.

2. I make this statement in support of a Petition Under 37 CFR § 1.48(a), which I am informed, and which I believe, will be filed herewith to amend the inventorship of the above-identified patent application to include myself.

3. The omission of myself as a named inventor in the patent application referred to above in paragraph one (1) resulted in an error in the inventorship of the above-identified patent application that occurred without any deceptive intent on my part.

Date: 8/10/01



Karl A. Littau

EXHIBIT C



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Xi et al.

PATENT APPLICATION

Serial No: 09/678,266

Group Art Unit: 1762

Filed: October 3, 2000

Examiner: Unassigned

For: METHOD AND APPARATUS FOR DEPOSITING REFRACTORY METAL LAYERS
EMPLOYING SEQUENTIAL DEPOSITION TECHNIQUES TO FORM A
NUCLEATION LAYER

Statement of Jeong Soo Byun Under 37 CFR § 1.48(a)(1)

I, JEONG SOO BYUN, states as follows:

1. I am over the age of eighteen years and am a co-inventor of the invention defined by the claims, in the above-identified patent application.

2. I make this statement in support of a Petition Under 37 CFR § 1.48(a), which I am informed, and which I believe, will be filed herewith to amend the inventorship of the above-identified patent application to remove myself Jeong Soo Byun, a citizen of South Korea having a residence address of 20975 Valley Green Drive #257, Cupertino, California 95014.

3. The addition of myself, Jeong Soo Byun resulted in an error in the inventorship of the above-identified patent application that occurred without any deceptive intent on my part.

Date:

8/10/2001

J. S. Byun
Jeong Soo Byun

EXHIBIT D



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Xi et al.

PATENT APPLICATION

Serial No: 09/678,266

Group Art Unit: 1762

Filed: October 3, 2000

Examiner: Unassigned

For: METHOD AND APPARATUS FOR DEPOSITING REFRACTORY METAL LAYERS
EMPLOYING SEQUENTIAL DEPOSITION TECHNIQUES TO FORM A
NUCLEATION LAYER

Statement of Lawrence Chung-Lai Lei Under 37 CFR § 1.48(a)(1)

I, LAWRENCE CHUNG-LAI LEI, states as follows:

1. I am over the age of eighteen years and am a co-inventor of the invention defined by the claims, in the above-identified patent application.

2. I make this statement in support of a Petition Under 37 CFR § 1.48(a), which I am informed, and which I believe, will be filed herewith to amend the inventorship of the above-identified patent application to remove myself, Lawrence Chung-Lai Lei, a citizen of the United States having a residence address of 1594 Country Club Drive, Milpitas, California 95035.

3. The addition of myself, Lawrence Chung-Lai Lei resulted in an error in the inventorship of the above-identified patent application that occurred without any deceptive intent on my part.

Date: 8/10/01


Lawrence Chung-Lai Lei

EXHIBIT E



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Xi et al.

PATENT APPLICATION

Serial No: 09/678,266

Group Art Unit: 1762

Filed: October 3, 2000

Examiner: Unassigned

For: METHOD AND APPARATUS FOR DEPOSITING REFRACTORY METAL LAYERS
EMPLOYING SEQUENTIAL DEPOSITION TECHNIQUES TO FORM A
NUCLEATION LAYER

Statement of Hua Chung Under 37 CFR § 1.48(a)(1)

I, HUA CHUNG, states as follows:

1. I am over the age of eighteen years and am a co-inventor of the invention defined by the claims, in the above-identified patent application.

2. I make this statement in support of a Petition Under 37 CFR § 1.48(a), which I am informed, and which I believe, will be filed herewith to amend the inventorship of the above-identified patent application to remove myself, Hua Chung, a citizen of Taiwan having a residence address of 4645 Piper Drive, San Jose, California 95129.

3. The addition of myself, Hua Chung resulted in an error in the inventorship of the above-identified patent application that occurred without any deceptive intent on my part.

Date: 8/17/01

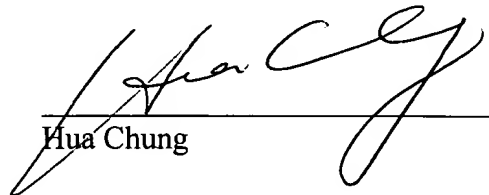

Hua Chung

EXHIBIT F

COMBINED DECLARATION AND POWER OF ATTORNEY

As a below named inventor, I hereby declare that:

This declaration is of the following type:

- ☐ original
- ☐ divisional
- ☐ continuation
- ☒ continuation-in-part

**MING XI, ASHOK SINHA, MORIS KORI, ALFRED W. MAK, XINLIANG LU, KEN KAUNG LAI AND
KARL A. LITTAU**

My residence, post office address and citizenship are as stated below next to my name. I believe I am an original, first and joint inventor of the subject matter which is claimed and for which a patent is sought on the invention entitled:

TITLE OF INVENTION

**METHOD AND APPARATUS FOR DEPOSITING REFRACTORY METAL LAYERS EMPLOYING
SEQUENTIAL DEPOSITION TECHNIQUES TO FORM A NUCLEATION LAYER**

SPECIFICATION IDENTIFICATION

The specification of which:

- ☐ is attached hereto
- ☒ was filed on October 3, 2001, having Serial No. 09/678,266 and was amended on _____ (if applicable)
- ☐ was described and claimed in PCT International Application No. _____ filed on _____ and as amended under PCT Article 19 on _____.

ACKNOWLEDGMENT OF REVIEW OF PAPERS AND DUTY OF CANDOR

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose all information I know to be material to patentability in accordance with Title 37, Code of Federal Regulations, 1.56,

and which is material to the examination of this application; namely, information where there is a substantial likelihood that a reasonable Examiner would consider it important in deciding whether to allow the application to issue as a patent, and

- ☐ In compliance with this duty there is attached an Information Disclosure Statement in accordance with 37 CFR 1.98.

PRIORITY CLAIM (35 U.S.C. §119)

I hereby claim foreign priority benefits under Title 35, United States Code, §119, of any foreign application(s) for patent or inventor's certificate or of any PCT international application(s) designating at least one country other than the United States of America or of any United States Provisional Application(s) listed below, and have also identified below any foreign application(s) for patent or inventor's certificate or any PCT international application(s) designating at least one country other than the United States of America filed by me on the same subject matter having a filing date before that of the application(s) of which priority is claimed.

- ☒ No such applications have been filed.
☐ Such applications have been filed as follows:

A. Prior foreign/PCT/provisional application(s) filed within 12 mos. (6 mos. for design) prior to this application, and any priority claims under 35 U.S.C. § 119

<u>Country/PCT</u>	<u>Application No</u>	<u>Date Filed</u>	<u>Priority Claimed</u>
			<input type="checkbox"/> Yes <input type="checkbox"/> No
			<input type="checkbox"/> Yes <input type="checkbox"/> No

B. All foreign application(s), if any, filed more than 12 mos. (6 mos for design) prior to this U.S. application

Country:
Application No:
Filing date:

PRIORITY CLAIM (35 U.S.C. §120)

I hereby claim the benefit under Title 35, United States Code, § 120, of any United States application(s) or PCT international application(s) designating the United States of America that is/are listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in that/those prior application(s) in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose information that is material to the examination of this application (namely, information where there is substantial likelihood that a reasonable Examiner would consider it important in deciding whether to allow the application to issue as a patent) which occurred between the filing date of the prior application(s) and the national or PCT international filing date of this application.

- ☐ No such applications have been filed
☒ Such applications have been filed, as follows:

<u>Serial No.</u>	<u>Filing Date</u>	<u>Status</u>	
		<u>Patented Pending</u>	<u>Abandoned</u>
09/605,593	6/28/2000	Pending	

POWER OF ATTORNEY

I hereby appoint the following attorneys and/or agents to prosecute this application and transact all business in the Patent and Trademark Office connected therewith:

Peter J. Sgarbossa	Registration No. 25,610
Donald Verplancken	Registration No. 33,217
Lawrence Edelman	Registration No. 25,226
Joseph Bach	Registration No. 37,771
Raymond Kam-On Kwong	Registration No. 37,165
James C. Wilson	Registration No. 35,412
Robert W. Mulcahy	Registration No. 25,436
Kenneth C. Brooks	Registration No. 38,393

Send correspondence to:

Patent Counsel, MS/2061
Legal Affairs Dept.
Applied Materials, Inc.
P.O. Box 450A
Santa Clara, CA 95052

Direct telephone calls to:

Kenneth C. Brooks
Law Office of Kenneth C. Brooks
512 527-0104

DECLARATION

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and, further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Sec. 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patents issued thereon.

Full name of sole inventor: Ming Xi

Inventor's signature: _____ Date: _____

Residence: Milpitas, California
Post Office Address: 138 Beaumere Way
Milpitas, California 95035
U.S.A.

Country of Citizenship: People's Republic of China

Full name of second inventor: Ashok Sinha

Inventor's signature: _____ Date: _____

Residence: Palo Alto, California
Post Office Address: 4176 Hubbart Drive
Palo Alto, California 95014
U.S.A.

Country of Citizenship: U.S.A.



Atty. Dkt. No.4714 P1/AMI-00-11

COMBINED DECLARATION AND POWER OF ATTORNEY

As a below named inventor, I hereby declare that:

This declaration is of the following type:

- ☐ original
- ☐ divisional
- ☐ continuation
- ☒ continuation-in-part

**MING XI, ASHOK SINHA, MORIS KORI, ALFRED W. MAK, XINLIANG LU, KEN KAUNG LAI AND
KARL A. LITTAU**

My residence, post office address and citizenship are as stated below next to my name. I believe I am an original, first and joint inventor of the subject matter which is claimed and for which a patent is sought on the invention entitled:

TITLE OF INVENTION

**METHOD AND APPARATUS FOR DEPOSITING REFRACTORY METAL LAYERS EMPLOYING
SEQUENTIAL DEPOSITION TECHNIQUES TO FORM A NUCLEATION LAYER**

SPECIFICATION IDENTIFICATION

The specification of which:

- ☐ is attached hereto
- ☒ was filed on October 3, 2001, having Serial No. 09/678,266 and was amended on _____ (if applicable)
- ☐ was described and claimed in PCT International Application No. _____ filed on _____ and as amended under PCT Article 19 on _____.

ACKNOWLEDGMENT OF REVIEW OF PAPERS AND DUTY OF CANDOR

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

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<u>Country/PCT</u>	<u>Application No</u>	<u>Date Filed</u>	<u>Priority Claimed</u>
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		<u>Patented Pending</u>	<u>Abandoned</u>
09/605,593	6/28/2000	Pending	

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I hereby appoint the following attorneys and/or agents to prosecute this application and transact all business in the Patent and Trademark Office connected therewith:

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Lawrence Edelman	Registration No. 25,226
Joseph Bach	Registration No. 37,771
Raymond Kam-On Kwong	Registration No. 37,165
James C. Wilson	Registration No. 35,412
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Full name of sole inventor: Ming Xi

Inventor's signature: _____ Date: _____

Residence: Milpitas, California

Post Office Address: 138 Beaumere Way
Milpitas, California 95035
U.S.A.

Country of Citizenship: People's Republic of China

Full name of second inventor: Ashok Sinha

Inventor's signature: _____ Date: _____

Residence: Palo Alto, California

Post Office Address: 4176 Hubbart Drive
Palo Alto, California 95014
U.S.A.

Country of Citizenship: U.S.A.

Full name of third inventor: Moris Kori

Inventor's signature: _____ Date: _____

Residence: Palo Alto, California

Post Office Address: 55 Hamilton Drive

Palo Alto, California 94301

U.S.A.

Country of Citizenship: U.S.A.

Full name of fourth inventor: Alfred W. Mak

Inventor's signature: _____ Date: _____

Residence: Union City, California

Post Office Address: 32722 Fellows Court

Union City, California 94587

U.S.A.

Country of Citizenship: U.S.A.

Full name of fifth inventor: Jeong Soo Byun

Inventor's signature: J. S. Byun Date: 1/18/2001

Residence: Cupertino, California

Post Office Address: 20975 Valley Green Drive #257

Cupertino, California 95014

U.S.A.

Country of Citizenship: South Korea

Full name of sixth inventor: Lawrence Chung-Lai Lei

Inventor's signature: _____ Date: _____

Residence: Milpitas, California

Post Office Address: 1594 Country Club Drive

Milpitas, California 95035

U.S.A.

Country of Citizenship: U.S.A.

Full name of seventh inventor: Hua Chung

Inventor's signature: _____ Date: _____

Residence: San Jose, California

Post Office Address: 4645 Piper Drive

San Jose, California 95129

U.S.A.

Country of Citizenship: Republic of China

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Residence: Milpitas, California

Post Office Address: 138 Beaumere Way
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U.S.A.

Country of Citizenship: People's Republic of China

Full name of second inventor: Ashok Sinha

Inventor's signature: _____ Date: _____

Residence: Palo Alto, California

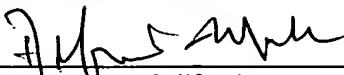
Post Office Address: 4176 Hubbart Drive
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U.S.A.

Country of Citizenship: U.S.A.

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Residence: Palo Alto, California
Post Office Address: 55 Hamilton Drive
Palo Alto, California 94301
U.S.A. Country of Citizenship: U.S.A.

Full name of fourth inventor: Alfred W. Mak

Inventor's signature:  _____ Date: 1/9/01
Residence: Union City, California
Post Office Address: 32722 Fellows Court
Union City, California 94587
U.S.A. Country of Citizenship: U.S.A.

Full name of fifth inventor: Jeong Soo Byun

Inventor's signature: _____ Date: _____
Residence: Cupertino, California
Post Office Address: 20975 Valley Green Drive #257
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U.S.A. Country of Citizenship: South Korea

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Inventor's signature: _____ Date: _____
Residence: Milpitas, California
Post Office Address: 1594 Country Club Drive
Milpitas, California 95035
U.S.A. Country of Citizenship: U.S.A.

Full name of seventh inventor: Hua Chung

Inventor's signature: _____ Date: _____
Residence: San Jose, California
Post Office Address: 4645 Piper Drive
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U.S.A. Country of Citizenship: Republic of China

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Raymond Kam-On Kwong	Registration No. 37,165
James C. Wilson	Registration No. 35,412
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Sarah Brashears	Registration No. 37,087
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U.S.A.

Country of Citizenship: People's Republic of China

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Inventor's signature: _____

Date: _____

Residence: Union City, California

Post Office Address: 32722 Fellows Court
Union City, California 94587
U.S.A.

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- ☐ In compliance with this duty there is attached an Information Disclosure Statement in accordance with 37 CFR 1.98.

PRIORITY CLAIM (35 U.S.C. §119)

I hereby claim foreign priority benefits under Title 35, United States Code, §119, of any foreign application(s) for patent or inventor's certificate or of any PCT international application(s) designating at least one country other than the United States of America or of any United States Provisional Application(s) listed below, and have also identified below any foreign application(s) for patent or inventor's certificate or any PCT international application(s) designating at least one country other than the United States of America filed by me on the same subject matter having a filing date before that of the application(s) of which priority is claimed.

- ☒ No such applications have been filed.
☐ Such applications have been filed as follows:

A. Prior foreign/PCT/provisional application(s) filed within 12 mos. (6 mos. for design) prior to this application, and any priority claims under 35 U.S.C. § 119

<u>Country/PCT</u>	<u>Application No</u>	<u>Date Filed</u>	<u>Priority Claimed</u>	
			<input type="checkbox"/> Yes	<input type="checkbox"/> No
			<input type="checkbox"/> Yes	<input type="checkbox"/> No

B. All foreign application(s), if any, filed more than 12 mos. (6 mos for design) prior to this U.S. application

Country:
Application No:
Filing date:

PRIORITY CLAIM (35 U.S.C. §120)

I hereby claim the benefit under Title 35, United States Code, § 120, of any United States application(s) or PCT international application(s) designating the United States of America that is/are listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in that/those prior application(s) in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose information that is material to the examination of this application (namely, information where there is substantial likelihood that a reasonable Examiner would consider it important in deciding whether to allow the application to issue as a patent) which occurred between the filing date of the prior application(s) and the national or PCT international filing date of this application.

- ☐ No such applications have been filed
☒ Such applications have been filed, as follows:

<u>Serial No.</u>	<u>Filing Date</u>	<u>Status</u>	
		<u>Patented Pending</u>	<u>Abandoned</u>
09/605,593	6/28/2000	Pending	

POWER OF ATTORNEY

I hereby appoint the following attorneys and/or agents to prosecute this application and transact all business in the Patent and Trademark Office connected therewith:

Peter J. Sgarbossa	Registration No. 25,610
Donald Verplancken	Registration No. 33,217
Lawrence Edelman	Registration No. 25,226
Michael B. Einschlag	Registration No. 29,301
Joseph Bach	Registration No. 37,771
Raymond Kam-On Kwong	Registration No. 37,165
James C. Wilson	Registration No. 35,412
Robert W. Mulcahy	Registration No. 25,436
Sarah Brashears	Registration No. 37,087
Kenneth C. Brooks	Registration No. 38,393

Send correspondence to:

Patent Counsel, MS/2061
Legal Affairs Dept.
Applied Materials, Inc.
P.O. Box 450A
Santa Clara, CA 95052

Direct telephone calls to:

Kenneth C. Brooks
Law Office of Kenneth C. Brooks
512 527-0104

DECLARATION

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and, further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Sec. 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patents issued thereon.

Full name of first inventor: Ming Xi

Inventor's signature: _____ Date: _____

Residence: Milpitas, California
Post Office Address: 138 Beaumere Way
Milpitas, California 95035
U.S.A.

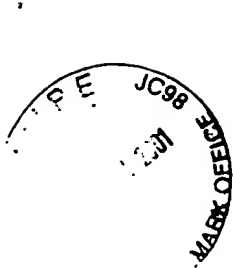
Country of Citizenship: People's Republic of China

Full name of second inventor: Ashok Sinha

Inventor's signature: _____ Date: _____

Residence: Palo Alto, California
Post Office Address: 4176 Hubbart Drive
Palo Alto, California 95014
U.S.A.

Country of Citizenship: U.S.A.



Atty. Dkt. No.4714 P1/AMI-00-11

COMBINED DECLARATION AND POWER OF ATTORNEY

As a below named inventor, I hereby declare that:

This declaration is of the following type:

- ☐ original
- ☐ divisional
- ☐ continuation
- ☒ continuation-in-part

MING XI, ASHOK SINHA, MORIS KORI, ALFRED W. MAK, XINLIANG LU, KEN KAUNG LAI AND
KARL A. LITTAU

My residence, post office address and citizenship are as stated below next to my name. I believe I am an original, first and joint inventor of the subject matter which is claimed and for which a patent is sought on the invention entitled:

TITLE OF INVENTION

METHOD AND APPARATUS FOR DEPOSITING REFRACTORY METAL LAYERS EMPLOYING
SEQUENTIAL DEPOSITION TECHNIQUES TO FORM A NUCLEATION LAYER

SPECIFICATION IDENTIFICATION

The specification of which:

- ☐ is attached hereto
- ☒ was filed on October 3, 2001, having Serial No. 09/678,266 and was amended on _____ (if applicable)
- ☐ was described and claimed in PCT International Application No. _____ filed on _____ and as amended under PCT Article 19 on _____.

ACKNOWLEDGMENT OF REVIEW OF PAPERS AND DUTY OF CANDOR

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose all information I know to be material to patentability in accordance with Title 37, Code of Federal Regulations, 1.56,

and which is material to the examination of this application; namely, information where there is a substantial likelihood that a reasonable Examiner would consider it important in deciding whether to allow the application to issue as a patent, and

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<u>Country/PCT</u>	<u>Application No</u>	<u>Date Filed</u>	<u>Priority Claimed</u>
			<input type="checkbox"/> Yes <input type="checkbox"/> No
			<input type="checkbox"/> Yes <input type="checkbox"/> No

B. All foreign application(s), if any, filed more than 12 mos. (6 mos for design) prior to this U.S. application

Country:
Application No:
Filing date:

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Full name of sole inventor: Ming Xi

Inventor's signature: _____ Date: _____

Residence: Milpitas, California
Post Office Address: 138 Beaumere Way
Milpitas, California 95035
U.S.A.

Country of Citizenship: People's Republic of China

Full name of second inventor: Ashok Sinha

Inventor's signature: _____ Date: _____

Residence: Palo Alto, California
Post Office Address: 4176 Hubbard Drive
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U.S.A.

Country of Citizenship: U.S.A.

Full name of third inventor: Moris Kori

Inventor's signature: _____ Date: _____
Residence: Palo Alto, California
Post Office Address: 55 Hamilton Drive
Palo Alto, California 94301
U.S.A. Country of Citizenship: U.S.A.

Full name of fourth inventor: Alfred W. Mak

Inventor's signature: _____ Date: _____
Residence: Union City, California
Post Office Address: 32722 Fellows Court
Union City, California 94587
U.S.A. Country of Citizenship: U.S.A.

Full name of fifth inventor: Xinliang Lu

Inventor's signature: _____ Date: _____
Residence: Sunnyvale, California
Post Office Address: 685 Garland Avenue #54
Sunnyvale, California 94086
U.S.A. Country of Citizenship: People's Republic of China

Full name of sixth inventor: Ken Kaung Lai

Inventor's signature: _____ Date: _____
Residence: Milpitas, California
Post Office Address: 1354 Terra Alta Drive
Milpitas, California 95035
U.S.A. Country of Citizenship: Republic of China (Taiwan)

Full name of seventh inventor: Karl A. Littau

Inventor's signature: _____ Date: _____
Residence: Palo Alto, California
Post Office Address: 3278 Bryant Street
Palo Alto, California 94303
U.S.A. Country of Citizenship: U.S.A.

(Declaration ends with this page)



Atty. Dkt. No.4714 P1/AMI-00-11

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- ☐ divisional
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- ☒ continuation-in-part

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- ☒ was filed on October 3, 2001, having Serial No. 09/678,266 and was amended on _____ (if applicable)
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SEE PAPER 8/12

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Application No:
Filing date:

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Full name of sole inventor: Ming Xi

Inventor's signature: Ming Xi Date: 8/10/07

Residence: Milpitas, California
Post Office Address: 138 Beaumere Way
Milpitas, California 95035
U.S.A.

Country of Citizenship: People's Republic of China

Full name of second inventor: Ashok Sinha

Inventor's signature: _____ Date: _____

Residence: Palo Alto, California
Post Office Address: 4176 Hubbard Drive
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U.S.A.

Country of Citizenship: U.S.A.

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U.S.A.

Country of Citizenship: People's Republic of China

Full name of second inventor: Ashok Sinha

Inventor's signature: Ashok K. Sinha Date: 8/21/01

Residence: Palo Alto, California
Post Office Address: 4176 Hubbart Drive
Palo Alto, California 95014
U.S.A.

Country of Citizenship: U.S.A.

Full name of third inventor: Moris Kori

Inventor's signature: Moris Kori

Date: 8.13.2001

Residence: Palo Alto, California

Post Office Address: 55 Hamilton Drive
Palo Alto, California 94301
U.S.A.

Country of Citizenship: U.S.A.

Full name of fourth inventor: Alfred W. Mak

Inventor's signature: _____

Date: _____

Residence: Union City, California

Post Office Address: 32722 Fellows Court
Union City, California 94587
U.S.A.

Country of Citizenship: U.S.A.

Full name of fifth inventor: Xinliang Lu ?

Inventor's signature: _____

Date: _____

Residence: Sunnyvale, California

Post Office Address: 685 Garland Avenue #54
Sunnyvale, California 94086
U.S.A.

Country of Citizenship: People's Republic of China

Full name of sixth inventor: Ken Kaung Lai ?

Inventor's signature: _____

Date: _____

Residence: Milpitas, California

Post Office Address: 1354 Terra Alta Drive
Milpitas, California 95035
U.S.A.

Country of Citizenship: Republic of China (Taiwan)

Full name of seventh inventor: Karl A. Littau ?

Inventor's signature: _____

Date: _____

Residence: Palo Alto, California

Post Office Address: 3278 Bryant Street
Palo Alto, California 94303
U.S.A.


Country of Citizenship: U.S.A.

(Declaration ends with this page)

Full name of third inventor: Moris Kori

Inventor's signature: _____ Date: _____
Residence: Palo Alto, California
Post Office Address: 55 Hamilton Drive
Palo Alto, California 94301
U.S.A. Country of Citizenship: U.S.A.

Full name of fourth inventor: Alfred W. Mak

Inventor's signature:  _____ Date: 8/10/01
Residence: Union City, California
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U.S.A. Country of Citizenship: U.S.A.

Full name of fifth inventor: Xinliang Lu

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U.S.A. Country of Citizenship: Republic of China (Taiwan)

Full name of seventh inventor: Karl A. Littau

Inventor's signature: _____ Date: _____
Residence: Palo Alto, California
Post Office Address: 3278 Bryant Street
Palo Alto, California 94303
U.S.A. Country of Citizenship: U.S.A.

(Declaration ends with this page)

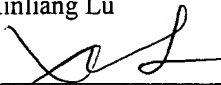
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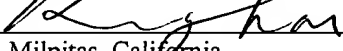
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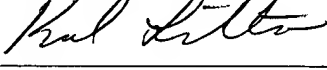
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Xi et al.

Serial No: 09/678,266

Filed: October 3, 2000

For: METHOD AND APPARATUS FOR DEPOSITING REFRACTORY METAL LAYERS,
EMPLOYING SEQUENTIAL DEPOSITION TECHNIQUES TO FORM A
NUCLEATION LAYER



PATENT APPLICATION #81/2

Group Art Unit: 1762

Examiner: Unassigned

Consent of Assignee, Applied Materials, Inc. Under 37 CFR § 1.48(a)

RECEIVED
SEP 27 2001
JC 1700

I, JOSEPH J. SWEENEY, states as follows:

1. I am over the age of eighteen years and am an officer of the Assignee of the rights, in the above-identified patent application, by virtue of my position as Assistant Secretary of Applied Materials, Inc., a Delaware Corporation having a place of business at 3050 Bowers Avenue, Santa Clara, California 95054.

2. I proffer this consent in support of a Petition Under 37 CFR § 1.48(a), which I am informed, and which I believe, will be filed herewith to amend the inventorship of the above-identified patent application to include Xinliang Lu, a citizen of the People's Republic of China having a residence address of 685 Garland Avenue #54, Sunnyvale, California 94086; Ken Kaung Lai, a citizen of Taiwan having a residence address of 1354 Terra Alta Drive, Milpitas, California 95035; and Karl A. Littau, a citizen of the United States of America having a residence address of 3278 Bryant Street, Palo Alto, California 94303. I also proffer this consent to amend the inventorship of the above-identified patent application to remove Jeong Soo Byun, a citizen of South Korea having a residence address of 20975 Valley Green Drive #257, Cupertino, California 95014; Lawrence Chung-Lai Lei, a citizen of the United States of America having a residence address of 1594 Country Club Drive, Milpitas, California 95035; and Hua Chung, a citizen of Taiwan having a residence address of 4645 Piper Drive, San Jose, California 95129.

Date: September 5, 2001

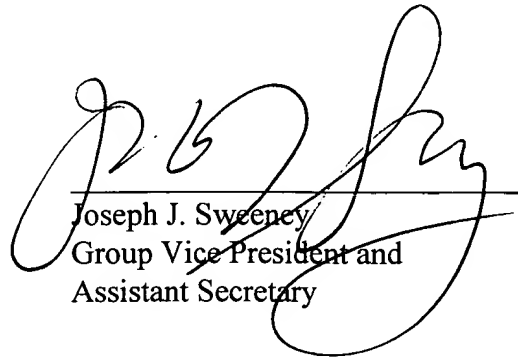

Joseph J. Sweeney
Group Vice President and
Assistant Secretary

EXHIBIT G

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Xi, et al.

PATENT APPLICATION

Serial No: 09/678,266

Group Art Unit: 1762

Filed: October 3, 2000

Examiner: Unassigned

For: METHOD AND APPARATUS FOR DEPOSITING REFRACTORY
METAL LAYERS EMPLOYING SEQUENTIAL DEPOSITION
TECHNIQUES TO FORM A NUCLEATION LAYER

Supplemental Sheet to Statement Under 3.73(b) Listing Documents In

The Chain of Title

From: Ming Xi	To: Applied Materials, Inc.
From: Ashok Sinha	To: Applied Materials, Inc.
From: Morris Kori	To: Applied Materials, Inc.
From: Alfred W. Mak	To: Applied Materials, Inc.
From: Xinliang Lu	To: Applied Materials, Inc.
From: Ken Kuang Lai	To: Applied Materials, Inc.
From: Karl Littau	To: Applied Materials, Inc.



Under the Paperwork Reduction Project of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

STATEMENT UNDER 37 CFR 3.73(b)

Applicant/Patent Owner: Joseph J. Sweeney

Application No./Patent No.: 09/678,266 Filed/Issue Date: October 3, 2000

METHOD AND APPARATUS FOR DEPOSITING REFRACTORY METAL LAYERS EMPLOYING
Entitled: SEQUENTIAL DEPOSITION TECHNIQUES TO FORM A NUCLEATION LAYER

APPLIED MATERIALS, INC., a Delaware Corporation
(Name of Assignee) (Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that it is:

1. ☐ the assignee of the entire right, title, and interest; or
2. ☒ an assignee of an undivided part interest

in the patent application/patent identified above by virtue of either:

- A. ☐ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.

OR

- B. ☒ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as shown below:

1. From: _____ To: _____
The document was recorded in the Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.
2. From: _____ To: _____
The document was recorded in the Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.
3. From: _____ To: _____
The document was recorded in the Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

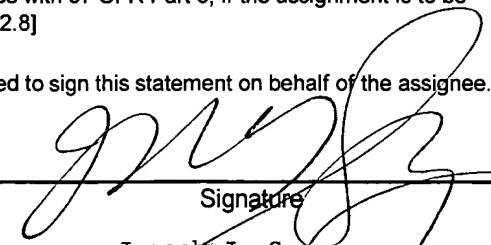
[X] Additional documents in the chain of title are listed on a supplemental sheet.

- ☒ Copies of assignments or other documents in the chain of title are attached.

(NOTE: A separate copy (i.e., the original assignment document or a true copy of the original document) must be submitted to Assignment Division in accordance with 37 CFR Part 3, if the assignment is to be recorded in the records of the PTO. See MPEP 302-302.8]

The undersigned (whose title is supplied below) is empowered to sign this statement on behalf of the assignee.

September 5, 2001
Date


Signature
Joseph J. Sweeney
Typed or printed name

Group Vice President and Assistant Secretary
Title

ASSIGNMENT FOR APPLICATION FOR PATENT

WHEREAS:

Names and Addresses of the Inventors:

1	Ming Xi 138 Beaumere Way Milpitas, California 95035	2	Ashok Sinha 4176 Hubbart Drive Palo Alto, California 94306
3	Moris Kori 55 Hamilton Court Palo Alto, California 94301	4	Alfred W. Mak 32722 Fellows Court Union City, California 94587
5	Jeong Soo Byun 20975 Valley Green Drive #257 Cupertino, California 95014	6	Lawrence Chung-Lai Lei 1594 Country Club Drive Milpitas, California 95035
7	Hua Chung 4645 Piper Drive San Jose, California 95129		

(hereinafter referred to as Assignors), has invented a certain invention entitled:

**METHOD AND APPARATUS FOR DEPOSITING REFRACTORY METAL LAYERS EMPLOYING
SEQUENTIAL DEPOSITION TECHNIQUES TO FORM A NUCLEATION LAYER**

for which application for Letters Patent in the United States was filed on October 3, 2000, under Serial No. 09/678,266, executed on even date herewith;

WHEREAS, Applied Materials, Inc., a corporation of the State of Delaware, having a place of business at 3050 Bowers Avenue, Santa Clara, California 95054 (hereinafter referred to as Assignee), is desirous of acquiring the entire right, title and interest in and to said application (hereinafter referred to as the Application), and the invention disclosed therein (hereinafter referred to as the Invention), and in and to all embodiments of the Invention, heretofore conceived, made or discovered by said Assignors, and in and to any and all patents, inventor's certificates and other forms of protection (hereinafter referred to as the Patents) thereon granted in any and all countries and groups of countries.

NOW, THEREFORE, in consideration of good and valuable consideration acknowledged by said Assignors to have been received in full from said Assignee:

1. Said Assignors hereby sells, assigns, transfers and conveys to Assignee the full and exclusive right, title and interest (a) in and to said Application and said Invention; (b) in and to all rights to apply for patents on said Invention in any and all countries pursuant to the International Convention for the Protection of Industrial Property or otherwise; (c) in and to any and all Applications filed and any and all Patents granted on said Invention in any and all countries and groups of countries, including each and every Application filed and each and every Patent granted on any application which is a division, substitution, or continuation of said Application; and (d) in and to each and every reissue or extension of any of said Patents.

2. Said Assignors hereby covenants and agrees to cooperate with said Assignee to enable said Assignee to enjoy to the fullest extent the right, title and interest to said Invention herein conveyed in any and all countries and groups of countries. Such cooperation by said Assignors shall include prompt production of pertinent facts and documents, giving testimony, execution of petitions, oaths, specifications, declarations or other papers, and other assistance all to the extent deemed necessary or

desirable by said Assignee (a) for perfecting in said Assignee the right, title and interest herein conveyed; (b) for prosecuting any of said applications; (c) for filing and prosecuting substitute, divisional, continuing or additional applications covering said Invention; (d) for filing and prosecuting applications for reissuance of any of said Patents; (e) for interference or other priority proceedings involving said Invention; and (f) for legal proceedings involving said Invention and any application therefor and any Patents granted thereon, including without limitation opposition proceedings, cancellation proceedings, priority contests, public use proceedings, infringement actions and court actions; provided, however, that the expense incurred by said Assignors in providing such cooperation shall be paid for by said Assignee.

3. The term and covenants of this agreement shall inure to the benefit of said Assignee, its successors, assigns and other legal representatives, and shall be binding upon said Assignors, their respective heirs, legal representatives and assigns.

4. Said Assignors hereby warrants and represents that he has not entered and will not enter into any assignment, contract, or understanding in conflict herewith.

5. Said Assignors hereby authorizes and requests the attorneys of record to insert, where indicated above, the application number and filing date of said application when known

IN WITNESS WHEREOF, the said Assignors has executed and delivered this instrument to said Assignee on the dates indicated below.

Jan. 9th, 2001

Ming Xi
Ming Xi

_____, 2001

Ashok Sinha

_____, 2001

Moris Kori

_____, 2001

Alfred W. Mak

_____, 2001

Jeong Soo Byun

_____, 2001

Lawrence Chung-Lai Lei

_____, 2001

Hua Chung

ASSIGNMENT FOR APPLICATION FOR PATENT

WHEREAS:

Names and Addresses of the Inventors:

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desirable by said Assignee (a) for perfecting in said Assignee the right, title and interest herein conveyed; (b) for prosecuting any of said applications; (c) for filing and prosecuting substitute, divisional, continuing or additional applications covering said Invention; (d) for filing and prosecuting applications for reissuance of any of said Patents; (e) for interference or other priority proceedings involving said Invention; and (f) for legal proceedings involving said Invention and any application therefor and any Patents granted thereon, including without limitation opposition proceedings, cancellation proceedings, priority contests, public use proceedings, infringement actions and court actions; provided, however, that the expense incurred by said Assignors in providing such cooperation shall be paid for by said Assignee.

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IN WITNESS WHEREOF, the said Assignors has executed and delivered this instrument to said Assignee on the dates indicated below.

_____, 2001

Ming Xi

1/8/_____, 2001

Ashok K. Sinha
Ashok Sinha

_____, 2001

Moris Kori

_____, 2001

Alfred W. Mak

_____, 2001

Jeong Soo Byun

_____, 2001

Lawrence Chung-Lai Lei

_____, 2001

Hua Chung

ASSIGNMENT FOR APPLICATION FOR PATENT

WHEREAS:

Names and Addresses of the Inventors:

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(hereinafter referred to as Assignors), has invented a certain invention entitled:

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IN WITNESS WHEREOF, the said Assignors has executed and delivered this instrument to said Assignee on the dates indicated below.

_____, 2001

Ming Xi

_____, 2001

Ashok Sinha

1/18/_____, 2001



Moris Kori

_____, 2001

Alfred W. Mak

_____, 2001

Jeong Soo Byun

_____, 2001

Lawrence Chung-Lai Lei

_____, 2001

Hua Chung

ASSIGNMENT FOR APPLICATION FOR PATENT

WHEREAS:

Names and Addresses of the Inventors:

1	Ming Xi 138 Beaumere Way Milpitas, California 95035	2	Ashok Sinha 4176 Hubbart Drive Palo Alto, California 94306
3	Moris Kori 55 Hamilton Court Palo Alto, California 94301	4	Alfred W. Mak 32722 Fellows Court Union City, California 94587
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_____, 2001

Ming Xi

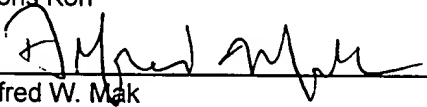
_____, 2001

Ashok Sinha

_____, 2001

Moris Kori

1/9, 2001



Alfred W. Mak

_____, 2001

Jeong Soo Byun

_____, 2001

Lawrence Chung-Lai Lei

_____, 2001

Hua Chung

ASSIGNMENT FOR APPLICATION FOR PATENT

WHEREAS:

Names and Addresses of Inventors:

1)	Xinliang Lu 685 Garland Avenue #54 Sunnyvale, California 94086	2)	Ken Kaung Lai 1354 Terra Alta Drive Milpitas, California 95035
3)	Karl A. Littau 3278 Bryant Street Palo Alto, California 94303		

(hereinafter referred to as Assignors), have invented a certain invention entitled:

**METHOD AND APPARATUS FOR DEPOSITINGH REFRACTORY METAL LAYERS EMPLOYING
SEQUENTIAL DEPOSITION TECHNIQUES TO FORM A NUCLEATION LAYER**

for which application for Letters Patent in the United States is filed herewith,

having serial number 09/678,266, filed on October 3, 2000.

WHEREAS, Applied Materials, Inc., a corporation of the State of Delaware, having a place of business at 3050 Bowers Avenue, Santa Clara, California 95054 (hereinafter referred to as Assignee), is desirous of acquiring the entire right, title and interest in and to said application (hereinafter referred to as the Application), and the invention disclosed therein (hereinafter referred to as the Invention), and in and to all embodiments of the Invention, heretofore conceived, made or discovered by said Assignors, and in and to any and all patents, inventor's certificates and other forms of protection (hereinafter referred to as the Patents) thereon granted in any and all countries and groups of countries.

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of any of said Patents; (e) for interference or other priority proceedings involving said Invention; and (f) for legal proceedings involving said Invention and any application therefore and any Patents granted thereon, including without limitation opposition proceedings, cancellation proceedings, priority contests, public use proceedings, infringement actions and court actions; provided, however, that the expense incurred by said Assignors in providing such cooperation shall be paid for by said Assignee.

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5. Said Assignors hereby authorize and request the attorneys of record to insert, where indicated above, the application number and filing date of said application when known.

IN WITNESS WHEREOF, the said Assignors have executed and delivered this instrument to said Assignee on the dates indicated below.

1) 08/10, 2001



Xinliang Lu

2) _____, 2001

Ken Kaung Lai

3) _____, 2001

Karl A. Littau

ASSIGNMENT FOR APPLICATION FOR PATENT

WHEREAS:

Names and Addresses of Inventors:

1)	Xinliang Lu 685 Garland Avenue #54 Sunnyvale, California 94086	2)	Ken Kaung Lai 1354 Terra Alta Drive Milpitas, California 95035
3)	Karl A. Littau 3278 Bryant Street Palo Alto, California 94303		

(hereinafter referred to as Assignors), have invented a certain invention entitled:

**METHOD AND APPARATUS FOR DEPOSITINGH REFRACTORY METAL LAYERS EMPLOYING
SEQUENTIAL DEPOSITION TECHNIQUES TO FORM A NUCLEATION LAYER**

for which application for Letters Patent in the United States is filed herewith,

having serial number 09/678,266, filed on October 3, 2000.

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IN WITNESS WHEREOF, the said Assignors have executed and delivered this instrument to said Assignee on the dates indicated below.

1) _____, 2001

Xinliang Lu

2) August 13th, 2001

Ken Kaung Lai

3) _____, 2001

Karl A. Littau

ASSIGNMENT FOR APPLICATION FOR PATENT

WHEREAS:

Names and Addresses of Inventors:

1)	Xinliang Lu 685 Garland Avenue #54 Sunnyvale, California 94086	2)	Ken Kaung Lai 1354 Terra Alta Drive Milpitas, California 95035
3)	Karl A. Littau 3278 Bryant Street Palo Alto, California 94303		

(hereinafter referred to as Assignors), have invented a certain invention entitled:

METHOD AND APPARATUS FOR DEPOSITING REFRACTORY METAL LAYERS EMPLOYING SEQUENTIAL DEPOSITION TECHNIQUES TO FORM A NUCLEATION LAYER

for which application for Letters Patent in the United States is filed herewith,

having serial number 09/678,266, filed on October 3, 2000.

WHEREAS, Applied Materials, Inc., a corporation of the State of Delaware, having a place of business at 3050 Bowers Avenue, Santa Clara, California 95054 (hereinafter referred to as Assignee), is desirous of acquiring the entire right, title and interest in and to said application (hereinafter referred to as the Application), and the invention disclosed therein (hereinafter referred to as the Invention), and in and to all embodiments of the Invention, heretofore conceived, made or discovered by said Assignors, and in and to any and all patents, inventor's certificates and other forms of protection (hereinafter referred to as the Patents) thereon granted in any and all countries and groups of countries.

NOW, THEREFORE, in consideration of good and valuable consideration acknowledged by said Assignors to have been received in full from said Assignee:

1. Said Assignors hereby sell, assign, transfer and convey to Assignee the full and exclusive right, title and interest (a) in and to said Application and said Invention; (b) in and to all rights to apply for patents on said Invention in any and all countries pursuant to the International Convention for the Protection of Industrial Property or otherwise; (c) in and to any and all Applications filed and any and all Patents granted on said Invention in any and all countries and groups of countries, including each and every Application filed and each and every Patent granted on any application which is a division, substitution, or continuation of said Application; and (d) in and to each and every reissue or extension of any of said Patents.

2. Said Assignors hereby covenant and agree to cooperate with said Assignee to enable said Assignee to enjoy to the fullest extent the right, title and interest to said Invention herein conveyed in any and all countries and groups of countries. Such cooperation by said Assignors shall include prompt production of pertinent facts and documents, giving testimony, execution of petitions, oaths, specifications, declarations or other papers, and other assistance all to the extent deemed necessary or desirable by said Assignee (a) for perfecting in said Assignee the right, title and interest herein conveyed; (b) for prosecuting any of said applications; (c) for filing and prosecuting substitute, divisional, continuing or additional applications covering said Invention; (d) for filing and prosecuting applications for reissuance of any of said Patents; (e) for interference or other priority proceedings involving said Invention; and (f) for legal proceedings involving said Invention and any application therefore and any Patents granted thereon,

including without limitation opposition proceedings, cancellation proceedings, priority contests, public use proceedings, infringement actions and court actions; provided, however, that the expense incurred by said Assignors in providing such cooperation shall be paid for by said Assignee.

3. The term and covenants of this agreement shall inure to the benefit of said Assignee, its successors, assigns and other legal representatives, and shall be binding upon said Assignors, their respective heirs, legal representatives and assigns.

4. Said Assignors hereby warrant and represent that they have not entered and will not enter into any assignment, contract, or understanding in conflict herewith.

5. Said Assignors hereby authorize and request the attorneys of record to insert, where indicated above, the application number and filing date of said application when known.

IN WITNESS WHEREOF, the said Assignors have executed and delivered this instrument to said Assignee on the dates indicated below.


1) _____, 2001

Xinliang Lu

2) _____, 2001

Ken Kaung Lai

3) 8/10, 2001


Karl A. Littau